

the spiral sculpture persists as distinctly raised lines, finer than on the embryonic whorls.

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**ATYS SEMISTRATA PEASE IN KANEOHOE BAY,
OAHU, HAWAIIAN ISLANDS**

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As well as the writer has been able to determine there is no account in the literature of the body parts of *Atys semistriata* Pease, nor of the conditions under which this species lives. Dr. Henry A. Pilsbry states, "Very little is known of the ecology of Hawaiian Tectibranchs. Collectors of living specimens should note their stations and such conditions as can be observed."¹ At this time the writer has additions to make to the literature concerning the external body parts, and the ecology of this species of Hawaiian Tectibranch.

During the years 1935-1937 the writer worked in conjunction with Dr. Charles Howard Edmondson of the University of Hawaii and the Bernice P. Bishop Museum, Honolulu, in making a survey of the fouling organisms in Kaneohe Bay, Oahu.² During these years eight individuals of *Atys semistriata* Pease were collected approximately 400 yards from the shore of the Territorial Fish and Game Farm in Kaneohe Bay at a depth of half a fathom. Data concerning these individuals together with other

¹ Pilsbry, H. A., *Marine Mollusks of Hawaii*—XIV, XV, *Proc. Acad. Nat. Sci.*, p. 360, 1920.

² Edmondson, C. H., and W. M. Ingram, *Fouling Organisms in Hawaii*, *Oceas. Papers*, Bernice P. Bishop Museum, pp. 251-300, Vol. XIV, No. 14, Jan., 1939.

mollusca that were associated with the fouling organism masses on submerged panels are included here.

The eight individuals of *Atys semistriata* collected were associated with the ectoproctan bryozoan, *Bugula neritina* Linnaeus. They were confined to this bryozoan, and were possibly feeding upon it or using its branches as clutch for their eggs. These specimens were transferred to the Waikiki laboratory and kept in a container filled with *Bugula*, and supplied by fresh sea-water. During the time they were confined to the container two globular egg masses were deposited amongst the branches of this bryozoan. These masses have an apparently thick outer covering of a gelatinous substance, the eggs being confined to the center of the mass. The eggs are white in color, and the mass is translucent.

A number of mollusks that often frequent habitats offered by masses of attached organisms were collected in association with this tectibranch species. The most common gastropod forms gathered in such a community were: *Peristerina chlorostoma* Sowerby, *Crepidula aculeata* Gmelin, *Triforis incisus* Pease, *Melanella aciculata* Pease, and *Littorina scabra* Linnaeus. *Teredo parksi* Bartsch, the destructive marine borer, was also commonly found in the panels used in the above mentioned fouling organism study.

A member of the family Mytilidae, *Musculus oahuus* Bartsch, was reported by Edmondson and Ingram as occurring commonly in the fouling organism mass.³ This species was very often found attached to or buried in the tunic of ascidians. The above writers believe that its relationship with ascidians is that of a commensal. Other Pelycopoda that were considered to be fouling organisms of importance associated with *Atys semistriata* were *Ostrea thanumi* Dall, Bartsch & Rehder, and *Pinctada nebulosa*. The former of these species was proven to be one of the important "foulers" in the Kaneohe Bay area.⁴

ATYS SEMISTRATIATA Pease.

The external body parts: Body blotched irregularly with pinkish spots; these color spots are confined to three zones: anterior, medial, and posterior, with a non-pigmented band between each

³ Edmondson, C. H., and W. M. Ingram, *op. cit.*

⁴ Edmondson, C. H., and W. M. Ingram, *op. cit.*

zone. These color zones run laterally, and are clearly visible throughout the translucent dorsal convexity of the shell. The eye spots are dorsally located close to the mid-dorsal line. The anterior body region is sprinkled profusely with minute pigment granules. The foot is quite long in the expanded condition and is lanceolate. The animal is capable of drawing its entire body within the aperture of the shell.

The shell: The shell is widely umbilicate, oval; color grayish-white, transparent; shell thin with sculpture of engraved encircling grooves; these do not begin from a common center, but run from the inner columella surface, maintaining the same distance apart throughout their length, and form an undulating pattern on the outer lip; the impressed grooves are deeply rounded, and form a broad concave surface at the bottom of the impression; anterior impressed grooves cover three-eighths of the dorsal surface; medial two-eighths of the dorsal surface without grooves; posterior three-eighths grooved; number of impressed grooves vary with the individual; the number of impressed grooves for the eight individuals are in the following table:

Individuals:	1	2	3	4	5	6	7	8
Number of anterior grooves:	17	16	17	12	12	13	11	14
Number of posterior grooves:	14	14	14	12	11	13	10	13

The vertex has a deep concavity about the posterior axis; axial fold high and steep; aperture narrowly rounded posteriorly; the canal is broad and flanges slightly dorsally; outer lip rounded and continuous from the anterior canal to the posterior columella extremity; anterior columella region narrow; widest portion of columella is at the middle.

All of the individuals upon which the above description is based were about 8 mm. in total shell length, the greatest total width being about one-half of the shell length.

The reported distribution of this species in the Hawaiian Islands is as follows: Kauai: Hanalei River and Haena. Oahu: Waikiki Beach, Kahala, Waimanalu, and Kaneohe Bay. Maui: Kahului dunes. Kahoolawe. The above distribution records with the exception of the Kaneohe Bay report were made by Pilsbry.⁵

Six species belonging to the genus *Alys* have been reported from the Hawaiian Islands. Of these species two subspecies of *semi-striata* Pease are recognized: *Alys kuhnsi* Pilsbry, *Alys semi-*

⁵ Pilsbry, H. A., *op. cit.*, publication, p. 365.

striata Pease, *Atys semistriata mua* Pilsbry, *Atys semistriata fordinsulae* Pilsbry, *Atys kekele* Pilsbry, *Atys debilis* Pease, *Atys costulosa* Pease, and *Atys cornuta* Pilsbry. Of these species *Atys kekele* Pilsbry was described from the fossil state. In the description of this species Pilsbry states:⁶ "Only found fossil in earth dug out of the taro field probably Pleistocene. It is related to *A. cylindrica* (Helbl.), but in the present species the upper part of the aperture is narrower, the excavation of the summit deeper with angular margin; the base is more effuse, and the columellar callus is more raised, the groove bounding it being wider. Oahu: on taro patch embankment west of Oahu railroad, about a half mile west of Waipahu station, Pilsbry, 1913. Type 116610 A. N. S. P."

A NEW FOSSIL COWRY FROM NORTH CAROLINA

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The cowry described here was collected by the late Joseph Willcox along the Cape Fear River, North Carolina. Its geological age is Miocene.

The two specimens upon which the following description is based were lent to the writer for description by Dr. Benjamin F. Howell of The Academy of Natural Sciences and of Princeton University.

The holotype and paratype specimens are so designated under number 781 of the invertebrate paleontological collection of The Academy of Natural Sciences, Philadelphia.

The cowry is named for Dr. Henry A. Pilsbry, Curator of the Department of Mollusca, The Academy of Natural Sciences, Philadelphia.

CYPRAEA PILSBRYI n. sp., pl. 9, fig. 2.

Shell broadly ovate; spire obscured; anterior and posterior

⁶ Pilsbry, H. A., *op. cit.*, publication, p. 366.